```
=> fil reg
FILE 'REGISTRY' ENTERED AT 22:49:49 ON 14 JUN 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:   13 JUN 2010  HIGHEST RN 1227570-00-4
DICTIONARY FILE UPDATES:  13 JUN 2010  HIGHEST RN 1227570-00-4

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 8, 2010.

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> d his

     (FILE 'HOME' ENTERED AT 21:46:01 ON 14 JUN 2010)

     FILE 'HCAPLUS' ENTERED AT 21:46:24 ON 14 JUN 2010
                E US20070148553/PN
L1            1 S E3
                SEL RN

     FILE 'REGISTRY' ENTERED AT 21:47:46 ON 14 JUN 2010
L2            7 S E1-7

     FILE 'LREGISTRY' ENTERED AT 21:57:35 ON 14 JUN 2010
L3          555 S (LI OR NA OR K)/ELS AND (T1 OR T2 OR T3 OR B2)/PG
L4          106 S L3 AND TIS/CI

     FILE 'REGISTRY' ENTERED AT 22:00:31 ON 14 JUN 2010
L5       140102 S L3
L6            5 S L2 AND L5
L7        67536 S L5 AND TIS/CI
L8        36963 S L7 AND LI/ELS
L9         4516 S L8 AND (CA OR SR OR BA)/ELS
L10        1091 S L9 AND (NB OR TA)/ELS
L11          66 S L10 AND O=12
L12           3 S L2 AND L11
L13           2 S L6 NOT L12
L14          63 S L11 NOT L6
L15          18 S L11 AND LI>5
L16           3 S L2 AND L15

     FILE 'HCAPLUS' ENTERED AT 22:23:33 ON 14 JUN 2010
L17          15 S L15
L18          21 S L13
```

```
L19           4 S L17 AND L18
L20           5 S L17-18 AND (PY<=2004 OR PRY<=2004 OR AY<=2004)
L21           1 S L17 AND L20
L22           4 S L20 NOT L21

     FILE 'REGISTRY' ENTERED AT 22:31:05 ON 14 JUN 2010
L23        5000 S L8 AND (NB OR TA)/ELS
L24         187 S L23 AND O=12
L25          22 S L24 AND LI>5
L26          22 S L25 NOT LI>7

     FILE 'HCAPLUS' ENTERED AT 22:34:10 ON 14 JUN 2010
L27          16 S L26
L28           1 S L27 AND (PY<=2004 OR PRY<=2004 OR AY<=2004)

     FILE 'REGISTRY' ENTERED AT 22:43:17 ON 14 JUN 2010
L29        1378 S L8 AND O=12
L30          74 S L29 AND LI>5 AND LI<7

     FILE 'HCAPLUS' ENTERED AT 22:44:00 ON 14 JUN 2010
L31          86 S L30
L32          35 S L31 AND (PY<=2004 OR PRY<=2004 OR AY<=2004)
L33             QUE CONDUCTOR?
L34           4 S L32 AND L33

     FILE 'REGISTRY' ENTERED AT 22:47:25 ON 14 JUN 2010
L35        3381 S L7 AND O=12
L36          74 S L35 AND LI>5 AND LI<7
L37          74 S L30 OR L36

     FILE 'HCAPLUS' ENTERED AT 22:48:56 ON 14 JUN 2010
L38             QUE 52/SC,SX
L39          30 S L32 AND L38
L40          27 S L39 NOT (L21 OR L22 OR L34)


=> fil hcap
FILE 'HCAPLUS' ENTERED AT 22:49:56 ON 14 JUN 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 14 Jun 2010  VOL 152 ISS 25
FILE LAST UPDATED: 13 Jun 2010  (20100613/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED:  Apr 2010
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE:  Apr 2010

HCAplus now includes complete International Patent Classification (IPC)
reclassification data for the second quarter of 2010.
```

CAS Information Use Policies apply and are available at:

http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d ibib abs hitstr hitind l21

L21 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1004669 HCAPLUS Full-text
DOCUMENT NUMBER: 143:289473
TITLE: Chemically stable solid lithium ion conductors
INVENTOR(S): Weppner, Werner; Thangadurai, Venkataraman
PATENT ASSIGNEE(S): Germany
SOURCE: PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005085138	A1	20050915	WO 2005-EP2255	20050303
			<--	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 102004010892	B3	20051124	DE 2004-102004010892	20040306
			<--	
EP 1723080	A1	20061122	EP 2005-715707	20050303
			<--	
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR				
CN 101014540	A	20070808	CN 2005-80011749	20050303
			<--	
JP 2007528108	T	20071004	JP 2007-502240	20050303
			<--	

US 20070148553	A1	20070628	US 2006-591714	200609 06
			<--	
KR 2007014141	A	20070131	KR 2006-720655	200610 02
			<--	
PRIORITY APPLN. INFO.:			DE 2004-102004010892A	200403 06
			<--	
			WO 2005-EP809 A	200501 27
			WO 2005-EP2255 W	200503 03

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to chemical stable solid lithium ion conductors, to a method for the production thereof and to the use thereof in batteries, accumulators, supercaps and electrochromic devices. The solid ion conductors are garnet-type crystals with an ion conductivity of 3.4 x 10-6 S/cm.

IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12) 856869-21-1, Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) 864365-67-3, Calcium lanthanum lithium tantalum oxide (CaLa2Li6Ta2O12) 864365-68-4
RL: DEV (Device component use); USES (Uses)
(chemical stable solid lithium ion conductors)

RN 118478-54-9 HCAPLUS
CN Lanthanum lithium niobium oxide (La3Li5Nb2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Nb	2	7440-03-1
Li	5	7439-93-2
La	3	7439-91-0

RN 118478-55-0 HCAPLUS
CN Lanthanum lithium tantalum oxide (La3Li5Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Li	5	7439-93-2
La	3	7439-91-0

RN 856869-21-1 HCAPLUS
CN Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	12	17778-80-2
Ba	1	7440-39-3
Ta	2	7440-25-7
Li	6	7439-93-2
La	2	7439-91-0

RN 864365-67-3 HCAPLUS
CN Calcium lanthanum lithium tantalum oxide (CaLa2Li6Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ca	1	7440-70-2
Ta	2	7440-25-7
Li	6	7439-93-2
La	2	7439-91-0

RN 864365-68-4 HCAPLUS
CN Lanthanum lithium strontium tantalum oxide (La2Li6SrTa2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Sr	1	7440-24-6
Li	6	7439-93-2
La	2	7439-91-0

IC ICM C01G033-00
ICS C01G035-00; C01G001-02; C01B021-082; C04B035-495; H01M010-40; H01M006-18; H01M008-12; H01B001-12
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72, 76
IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12) 856869-21-1, Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) 864365-67-3, Calcium lanthanum lithium tantalum oxide (CaLa2Li6Ta2O12) 864365-68-4
RL: DEV (Device component use); USES (Uses)
(chemical stable solid lithium ion conductors)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d ibib abs hitstr hitind l22 1-4

L22 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2004:563762 HCAPLUS Full-text
DOCUMENT NUMBER: 141:269089
TITLE: Crystal Structure Revision and Identification of

Li+-Ion Migration Pathways in the Garnet-like Li5La3M2O12 (M = Nb, Ta) Oxides

AUTHOR(S): Thangadurai, Venkataraman; Adams, Stefan; Weppner, Werner
CORPORATE SOURCE: Faculty of Engineering, University of Kiel, Kiel, D-24143, Germany

SOURCE: Chemistry of Materials (2004), 16(16), 2998-3006
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Bond valence sums for the ion positions in single-crystal structure data of the garnet-like fast lithium ion conductors Li5La3M2O12 (M = Nb, Ta) exhibit unusually large deviations from the ideal valences. The root-mean-square bond valence mismatch (commonly termed global instability index GII) and the chemical plausibility of the structure model can be significantly improved by optimizing the light atoms (oxygen and lithium) positions using a bond valence mismatch minimization procedure in the previously suggested space group I213 or its centrosym. counterpart Ia.hivin.3. Possible pathways for lithium ion migration in Li5La3M2O12 are identified by a bond valence anal. Li-bond valence mismatch isosurface models for Li+-ion transport pathways are nearly the same in both compds. Li5La3Nb2O12 and Li5La3Ta2O12. The characteristic feature of the three-dimensional Li+-ion pathway network is a nonplanar square of partially occupied Li sites.

IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties)
(crystal structure revision and identification of Li+-ion migration pathways in the garnet-like Li5La3Nb2O12 and Li5La3Ta2O12 ionic conductors)

RN 118478-54-9 HCAPLUS
CN Lanthanum lithium niobium oxide (La3Li5Nb2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Nb	2	7440-03-1
Li	5	7439-93-2
La	3	7439-91-0

RN 118478-55-0 HCAPLUS
CN Lanthanum lithium tantalum oxide (La3Li5Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Li	5	7439-93-2
La	3	7439-91-0

CC 76-1 (Electric Phenomena)
Section cross-reference(s): 75

IT 17341-24-1, Lithium(1+), properties 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties)

(crystal structure revision and identification of Li+-ion migration pathways in the garnet-like Li5La3Nb2O12 and Li5La3Ta2O12 ionic conductors)

OS.CITING REF COUNT: 44 THERE ARE 44 CAPLUS RECORDS THAT CITE THIS RECORD (44 CITINGS)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2003:262401 HCAPLUS Full-text

DOCUMENT NUMBER: 139:10742

TITLE: Novel fast lithium ion conduction in garnet-type Li5La3M2O12 (M = Nb, Ta)

AUTHOR(S): Thangadurai, Venkataraman; Kaack, Heiko; Weppner, Werner J. F.

CORPORATE SOURCE: Chair for Sensors and Solid State Ionics Faculty of Engineering, University of Kiel, Kiel, 24143, Germany

SOURCE: Journal of the American Ceramic Society (2003), 86(3), 437-440
CODEN: JACTAW; ISSN: 0002-7820

PUBLISHER: American Ceramic Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Lithium metal oxides with the nominal composition Li5La3M2O12 (M = Nb, Ta), possessing a garnetlike structure, were examined with regard to their elec. properties. These compds. form a new class of solid-state lithium ion conductors with a different crystal structure compared with all those known so far. The materials are prepared by solid-state reaction and characterized by powder XRD and a.c. impedance to determine their lithium ionic conductivity Both the niobium and tantalum members exhibit the same order of magnitude of bulk conductivity (.apprx.10-6 S/cm at 25°C). The activation energies for ionic conductivity (<300°C) are 0.43 and 0.56 eV for Li5La3Nb2O12 and Li5La3Ta2O12, resp., which are comparable to those of other solid lithium conductors, such as Lisicon, Li14ZnGe4O16. Among the investigated materials, the tantalum compound Li5La3Ta2O12 is stable against reaction with molten lithium. Further tailoring of the compns. by appropriate chemical substitutions and improved synthesizing methods, especially with regard to minimizing grain-boundary resistance, are important issues in view of the potential use of the new class of compds. as electrolytes in practical lithium ion batteries.

IT 118478-54-9P, Lanthanum lithium niobium oxide La3Li5Nb2O12
118478-55-0P, Lanthanum lithium tantalum oxide La3Li5Ta2O12
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(garnet-type, ionic conductors; solid-state reaction preparation and elec. properties of garnet-type Li5La3M2O12 (M = Nb, Ta) lithium ion conductors)

RN 118478-54-9 HCAPLUS

CN Lanthanum lithium niobium oxide (La3Li5Nb2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Nb	2	7440-03-1
Li	5	7439-93-2
La	3	7439-91-0

RN 118478-55-0 HCAPLUS
CN Lanthanum lithium tantalum oxide (La3Li5Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Li	5	7439-93-2
La	3	7439-91-0

CC 57-2 (Ceramics)
Section cross-reference(s): 52, 76
IT 118478-54-9P, Lanthanum lithium niobium oxide La3Li5Nb2O12
118478-55-0P, Lanthanum lithium tantalum oxide La3Li5Ta2O12
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(garnet-type, ionic conductors; solid-state reaction preparation and elec. properties of garnet-type Li5La3M2O12 (M = Nb, Ta) lithium ion conductors)
OS.CITING REF COUNT: 45 THERE ARE 45 CAPLUS RECORDS THAT CITE THIS RECORD (45 CITINGS)
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1989:87276 HCAPLUS Full-text
DOCUMENT NUMBER: 110:87276
ORIGINAL REFERENCE NO.: 110:14255a,14258a
TITLE: Remarks on a ternary phase in the lanthanum sesquioxide-metal oxide (M2O5)-lithium oxide system (M = Nb, Ta)
AUTHOR(S): Mazza, D.
CORPORATE SOURCE: Dip. Sci. Mater. Ing., Chim. Politec. Torino, Turin, 10129, Italy
SOURCE: Materials Letters (1988), 7(5-6), 205-7
CODEN: MLETDJ; ISSN: 0167-577X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A phase belonging to the ternary system La2O3-Li2O-M2O5 (M = Nb, Ta) was prepared and characterized both chemical and structurally. It has cubic symmetry (space group Ia3d), a0 = 13 Å, gross formula La3Li5M2O12 and it shows a structure based on the garnet O framework, but with 2 unusual features. Firstly Li atoms enter the octahedral holes centered at 1/4,1/4,1/4 inside the unit cell (elsewhere empty in the normal garnets) and secondly a large trivalent cation like La3+ is supported for the 1st time by a garnet-like structure. This could influence possible ferroelec. properties of the material.
IT 118478-54-9P, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0P, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and crystal structure of)
RN 118478-54-9 HCAPLUS
CN Lanthanum lithium niobium oxide (La3Li5Nb2O12) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	12	17778-80-2
Nb	2	7440-03-1
Li	5	7439-93-2
La	3	7439-91-0

RN 118478-55-0 HCAPLUS
CN Lanthanum lithium tantalum oxide (La3Li5Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Li	5	7439-93-2
La	3	7439-91-0

CC 78-2 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75
IT 118478-54-9P, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0P, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and crystal structure of)
OS.CITING REF COUNT: 26 THERE ARE 26 CAPLUS RECORDS THAT CITE THIS RECORD (26 CITINGS)

L22 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1989:48884 HCAPLUS Full-text
DOCUMENT NUMBER: 110:48884
ORIGINAL REFERENCE NO.: 110:7919a,7922a
TITLE: Crystal structures of La3Li5M2O12 (M = niobium, tantalum)
AUTHOR(S): Hyooma, H.; Hayashi, K.
CORPORATE SOURCE: Lab. Solid State Chem., Okayama Univ. Sci., Okayama, 700, Japan
SOURCE: Materials Research Bulletin (1988), 23(10), 1399-407
CODEN: MRBUAC; ISSN: 0025-5408
DOCUMENT TYPE: Journal
LANGUAGE: English
AB La3Li5Nb2O12 and La3Li5Ta2O12 are cubic, space group I213, with a 12.797 and 12.804 Å and Rw values of 0.052 and 0.067, resp. They have 3-dimensional framework structures consisting of La,Nb(Ta),O. The Li atoms occupy 2 kinds of interstices in the framework, undistorted and distorted octahedral sites. The distorted octahedral sites are partially occupied by the Li atoms. The nonstoichiometry of Li and O is discussed. Atomic coordinates are given.
IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties)
(crystal structure of)
RN 118478-54-9 HCAPLUS
CN Lanthanum lithium niobium oxide (La3Li5Nb2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	12	17778-80-2
Nb	2	7440-03-1
Li	5	7439-93-2
La	3	7439-91-0

RN 118478-55-0 HCAPLUS
CN Lanthanum lithium tantalum oxide (La3Li5Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Li	5	7439-93-2
La	3	7439-91-0

CC 75-8 (Crystallography and Liquid Crystals)
Section cross-reference(s): 78
IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12)
RL: PRP (Properties)
(crystal structure of)
OS.CITING REF COUNT: 27 THERE ARE 27 CAPLUS RECORDS THAT CITE THIS RECORD (27 CITINGS)

=> d ibib abs hitstr hitind l34 1-4

L34 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2007:1324811 HCAPLUS Full-text
DOCUMENT NUMBER: 147:552779
TITLE: Actuation using lithium/metal alloys and actuator device at higher than conventional energy densities and much larger strains in all environments
INVENTOR(S): Liu, Ping; Massey, Cameron; Momoda, Leslie; Mcknight, Geoffrey; Barvosa-Carter, William; Jacobsen, Alan
PATENT ASSIGNEE(S): HRL Laboratories, LLC, USA
SOURCE: U.S., 9pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 7298017	B1	20071120	US 2004-927965	200408 28
			<--	
PRIORITY APPLN. INFO.:			US 2004-927965	200408 28
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Actuation using lithium/metal alloys and actuator device at higher than conventional energy densities and much larger strains in all environments are claimed. In one embodiment, a solid state actuator is provided having a solid state Li storage material and a solid state volume changing material having a metal capable of changing volume in response to Li insertion and removal. A solid state Li ion transport material is located between the Li storage material and the volume changing material. A pair of electrodes are connected so as to be capable of providing an actuation voltage across the Li storage material and the volume changing material. In some embodiments, the volume changing material has active material particles comprised of metal contained in an inactive matrix. The active material particles may be aligned so that when the active material particles expand the volume changing material expands substantially in one direction. In some embodiments the volume changing material is a metal alloy and the Li transport material is a high stiffness material. In some embodiments, multiple actuators are stacked, interleaved, or pillared.

IT 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: TEM (Technical or engineered material use); USES (Uses)
(actuation using lithium alloys and actuator device)

RN 188029-35-8 HCAPLUS

CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

INCL 257415000; 257420000; 257428000

CC 76-14 (Electric Phenomena)
Section cross-reference(s): 72

IT Actuators
Composites
Dopants
Electric contacts
Energy storage
Particles
Superionic conductors
(actuation using lithium alloys and actuator device)

IT Ionic conductors
(lithium; actuation using lithium alloys and actuator device)

IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7782-42-5, Graphite, uses 12136-58-2, Lithium sulfide 28980-49-6 39302-37-9, Lithium titanium oxide 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: TEM (Technical or engineered material use); USES (Uses)
(actuation using lithium alloys and actuator device)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2006:443021 HCAPLUS Full-text

DOCUMENT NUMBER: 144:436133

TITLE: Lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors and their anodes

INVENTOR(S): Ukaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006120337	A	20060511	JP 2004-304089	200410 19 <--

PRIORITY APPLN. INFO.: JP 2004-304089 200410 19 <--

AB The anodes consist of Li-precipitating conductive substrates and Li ion-conductive layers represented by Lx1PTy1Oz1 or Lx2MOy2Nz2 [T = Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Ru, Ag, Ta, W, Pt, and/or Au; 2.0 ≤ x1 ≤ 7.0; 0.01 ≤ y1 ≤ 1.0; 3.5 ≤ z1 ≤ 8.0; M = Si, B, Ge, Al, C, Ga, and/or S; plural range sets of (x2, y2, z2) are given] and being formed on the substrate surface. Lithium secondary batteries employing the anodes suppress rise in anode impedance and show long cycle life.

IT 782495-76-5P, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anodes; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
RN 782495-76-5 HCAPLUS
CN Lithium tungsten oxide phosphate (Li7W2O8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
O4P	1	14265-44-2
W	2	7440-33-7
Li	7	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery anode lithium phosphorus tungsten oxide ion conductor; lithium silicon oxynitride ion conductor battery anode; moisture stability lithium secondary battery anode
IT Secondary batteries
(button-type; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
IT Secondary batteries
(lithium; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
IT Battery anodes
Ionic conductors
(manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(anode components; manufacture of lithium secondary batteries having

wet-stable oxide or nitride-based ionic conductors)

IT 782495-23-2P, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3P, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4P, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5P, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6P, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7P, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8P, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1P, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2P, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3P, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4P, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5P, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6P, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7P, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8P, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9P, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0P, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-41-4P, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5P, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6P, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9) 782495-44-7P, Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) 782495-47-0P, Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) 782495-48-1P, Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) 782495-49-2P, Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) 782495-50-5P, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) 782495-51-6P, Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) 782495-52-7P, Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) 782495-53-8P, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9P, Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-55-0P, Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) 782495-56-1P, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-57-2P, Lithium silver phosphate (Li2.8Ag0.2(PO4)) 782495-58-3P, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4P, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7P, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-61-8P, Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4)) 782495-62-9P, Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4)) 782495-63-0P, Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) 782495-64-1P, Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) 782495-65-2P, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) 782495-66-3P, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) 782495-67-4P, Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4)) 782495-69-6P, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) 782495-70-9P, Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4)) 782495-72-1P, Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4)) 782495-74-3P, Lithium tungsten oxide phosphate (Li5WO4(PO4)) 782495-76-5P, Lithium tungsten oxide phosphate (Li7W2O8(PO4)) 816415-85-7P, Boron lithium nitride oxide (BLi0.8N0.3O1.45) 816416-34-9P, Germanium lithium nitride oxide (GeLi1.8N0.3O2.45) 816416-38-3P, Aluminum lithium nitride oxide (AlLi0.8N0.3O1.45) 816416-40-7P, Aluminum lithium nitride oxide (AlLi4.8N0.3O3.45) 816416-44-1P, Gallium lithium nitride oxide (GaLi0.8N0.3O1.45) 816416-46-3P,

Lithium sulfur nitride oxide (Li1.8SN0.3O3.45) 816416-50-9P, Boron lithium nitride oxide silicate (B0.5Li2.3N0.3O0.45(SiO4)0.5) 816416-52-1P, Germanium lithium nitride oxide silicate (Ge0.5Li3.8N0.3O1.45(SiO4)0.5) 816416-54-3P, Carbon lithium nitride oxide silicate (C0.5Li2.8N0.3O2.95(SiO4)0.5) 816416-56-5P, Lithium silicon nitride oxide sulfate (Li2.8Si0.5N0.3O1.45(SO4)0.5) 816416-58-7P, Germanium lithium borate nitride oxide (Ge0.5Li2.3(BO3)0.5N0.3O0.95) 816416-60-1P, Aluminum lithium borate nitride oxide (Al0.5Li2.8(BO3)0.5N0.3O0.95) 816416-62-3P, Boron lithium carbonate nitride oxide (B0.5Li1.3(CO3)0.5N0.3O0.45) 816416-64-5P, Gallium lithium borate nitride oxide (Ga0.5Li0.8(BO2)0.5N0.3O0.45) 816416-66-7P, Boron lithium nitride oxide sulfate (B0.5Li1.3N0.3O0.45(SO4)0.5) 816416-68-9P 816416-70-3P, Germanium lithium nitride oxide sulfate (Ge0.5Li2.8N0.3O1.45(SO4)0.5) 816416-72-5P, Aluminum gallium lithium nitride oxide (Al0.5Ga0.5Li2.8N0.3O2.45) 816416-74-7P, Carbon lithium nitride oxide sulfate (C0.5Li1.8N0.3O0.95(SO4)0.5) 882681-95-0P, Lithium titanium oxide phosphate (Li2.8Ti0.2O0.3(PO4)) 882682-19-1P, Lithium zirconium oxide phosphate (Li4Zr0.25O(PO4)) 882682-64-6P, Lithium silicon nitride oxide (Li1.8SiN0.5O2.15) 884739-67-7P, Lithium silicon nitride oxide (Li1.8SiN0.3O2.45) 885122-24-7P, Aluminum lithium nitride oxide (AlLi1.8N0.3O2.45)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anodes; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

IT 12190-79-3, Lithium cobaltate (LiCoO2)
RL: DEV (Device component use); USES (Uses)
(cathode active mass; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

IT 11109-50-5, SUS 304
RL: DEV (Device component use); USES (Uses)
(copper-deposited, anode substrates; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(precipitated, anode components; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

L34 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1004669 HCAPLUS Full-text
DOCUMENT NUMBER: 143:289473
TITLE: Chemically stable solid lithium ion conductors
INVENTOR(S): Weppner, Werner; Thangadurai, Venkataraman
PATENT ASSIGNEE(S): Germany
SOURCE: PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005085138	A1	20050915	WO 2005-EP2255	

200503
03
<--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,
UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

DE 102004010892 B3 20051124 DE 2004-102004010892
200403
06
<--

EP 1723080 A1 20061122 EP 2005-715707
200503
03
<--
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR

CN 101014540 A 20070808 CN 2005-80011749
200503
03
<--

JP 2007528108 T 20071004 JP 2007-502240
200503
03
<--

US 20070148553 A1 20070628 US 2006-591714
200609
06
<--

KR 2007014141 A 20070131 KR 2006-720655
200610
02
<--

PRIORITY APPLN. INFO.: DE 2004-102004010892A
200403
06
<--
WO 2005-EP809 A
200501
27

WO 2005-EP2255 W
200503
03

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to chemical stable solid lithium ion conductors, to a method for the production thereof and to the use thereof in batteries, accumulators, supercaps and electrochromic devices. The solid ion conductors are garnet-type crystals with an ion conductivity of 3.4 x 10-6 S/cm.

IT 856869-21-1, Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) 864365-67-3, Calcium lanthanum lithium

tantalum oxide (CaLa2Li6Ta2O12) 864365-68-4
RL: DEV (Device component use); USES (Uses)
(chemical stable solid lithium ion conductors)

RN 856869-21-1 HCAPLUS
CN Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ba	1	7440-39-3
Ta	2	7440-25-7
Li	6	7439-93-2
La	2	7439-91-0

RN 864365-67-3 HCAPLUS
CN Calcium lanthanum lithium tantalum oxide (CaLa2Li6Ta2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ca	1	7440-70-2
Ta	2	7440-25-7
Li	6	7439-93-2
La	2	7439-91-0

RN 864365-68-4 HCAPLUS
CN Lanthanum lithium strontium tantalum oxide (La2Li6SrTa2O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ta	2	7440-25-7
Sr	1	7440-24-6
Li	6	7439-93-2
La	2	7439-91-0

IC ICM C01G033-00
ICS C01G035-00; C01G001-02; C01B021-082; C04B035-495; H01M010-40; H01M006-18; H01M008-12; H01B001-12
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72, 76
ST battery stable solid lithium ion conductor
IT Cathodoluminescent screens
Electrochromic devices
Fuel cells
Garnet-type crystals
Ionic conductors
Sensors
Sintering
(chemical stable solid lithium ion conductors)
IT Windows
(electrochromic; chemical stable solid lithium ion conductors)
IT Construction materials

(facades; chemical stable solid lithium ion conductors)
IT Secondary batteries
(lithium; chemical stable solid lithium ion conductors)
IT Capacitors
(supercapacitors; chemical stable solid lithium ion conductors)
IT Electrochromic devices
(windows; chemical stable solid lithium ion conductors)
IT 1314-23-4, Zirconia, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(chemical stable solid lithium ion conductors)
IT 118478-54-9, Lanthanum lithium niobium oxide (La3Li5Nb2O12) 118478-55-0, Lanthanum lithium tantalum oxide (La3Li5Ta2O12) 856869-21-1, Barium lanthanum lithium tantalum oxide (BaLa2Li6Ta2O12) 864365-67-3, Calcium lanthanum lithium tantalum oxide (CaLa2Li6Ta2O12) 864365-68-4
RL: DEV (Device component use); USES (Uses)
(chemical stable solid lithium ion conductors)
IT 67-63-0, 2-Propanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(chemical stable solid lithium ion conductors)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:259456 HCAPLUS Full-text
DOCUMENT NUMBER: 142:339044
TITLE: Nonaqueous electrolyte battery
INVENTOR(S): Inagaki, Hiroki; Tatebayashi, Yoshinao; Takami, Norio
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050064282	A1	20050324	US 2004-943857 <--	200409 20
JP 2005100770	A	20050414	JP 2003-332109 <--	200309 24
JP 4159954	B2	20081001		
US 20100143790	A1	20100610	US 2010-707444 <--	201002 17

PRIORITY APPLN. INFO.: JP 2003-332109 A 200309

24
<--
US 2004-943857 A1
200409
20
<--

AB A nonaq. electrolyte battery includes a case, a nonaq. electrolyte provided in the case, a pos. electrode provided in the case, and a neg. electrode provided in the case, including a neg. electrode active material and an electronic conductor containing a carbonaceous material, wherein a neg. electrode working potential is nobler at least 1 V than a lithium electrode potential, and the carbonaceous material has a spacing (d 002) of (002) plane of 0.344 nm or more and 0.352 nm or less, and a crystallite size (Lc) in the C-axis direction of 10 nm or less.

IT 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery)

RN 188029-35-8 HCAPLUS

CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

IC ICM H01M002-00
ICS H01M002-26; H01M002-28; H01M004-36; H01M004-52; H01M004-58

INCL 429163000; 429231800; 429221000; 429231100; 429231500; 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate
1314-35-8, Tungsten oxide, uses 1317-37-9, Iron sulfide (FeS)
11098-99-0, Molybdenum oxide 11126-12-8, Iron sulfide
12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12190-79-3, Cobalt lithium oxide (CoLiO2) 12673-92-6, Titanium sulfide 14283-07-9, Lithium tetrafluoroborate 39302-37-9, Lithium titanate
188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
848395-17-5, Iron sulfide (FeS1.08-1.33)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery)

OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)

=> d ibib abs hitstr hitind l40 1-27

L40 ANSWER 1 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2006:384961 HCAPLUS Full-text
DOCUMENT NUMBER: 144:436091
TITLE: Lithium battery anode with inorg. compound. layer formed on active material layer
INVENTOR(S): Ugaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006043470	A1	20060427	WO 2005-JP18917	200510 14
			<--	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 1677375	A1	20060705	EP 2005-793190	200510 14
			<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
CN 1860628	A	20061108	CN 2005-80001076	200510 14
			<--	
CN 100454613	C	20090121		
JP 4444287	B2	20100331	JP 2006-522820	200510 14
			<--	
KR 2006085625	A	20060727	KR 2006-706328	200603 31
			<--	
US 20070020520	A1	20070125	US 2006-575889	200604 14
			<--	
US 7632607	B2	20091215		
PRIORITY APPLN. INFO.:			JP 2004-306649 A	200410 21
			<--	
			WO 2005-JP18917 W	200510 14

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Disclosed is a neg. electrode for batteries which comprises a collector, an active material layer and an inorg. compound. layer. The active material layer is formed on the collector, and the inorg. compound. layer is formed on the surface of the active material layer. The general formula of the inorg. compound. layer is expressed as LixPTyOz or LixMOyNz. The compound.

constituting the inorg. compound. layer has lithium ion conductivity and excellent moisture resistance.

IT 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
RL: TEM (Technical or engineered material use); USES (Uses)
(inorg. compound. layer for lithium battery)

RN 782495-76-5 HCAPLUS

CN Lithium tungsten oxide phosphate (Li7W2O8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
O4P	1	14265-44-2
W	2	7440-33-7
Li	7	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 782495-53-8, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9, Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-56-1, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-58-3, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-65-2, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) 782495-66-3, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) 782495-67-4, Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4)) 782495-69-6, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) 782495-70-9, Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4)) 782495-72-1, Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4)) 782495-74-3, Lithium tungsten oxide phosphate (Li5WO4(PO4)) 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4)) 816415-85-7, Boron lithium nitride oxide (BLi0.8N0.3O1.45) 816416-34-9, Germanium lithium nitride oxide (GeLi1.8N0.3O2.45) 816416-38-3, Aluminum lithium nitride oxide (AlLi0.8N0.3O1.45) 816416-40-7, Aluminum lithium nitride oxide (AlLi4.8N0.3O3.45) 816416-42-9, Carbon lithium nitride oxide (CLi1.8N0.3O2.45) 816416-44-1, Gallium lithium nitride oxide (GaLi0.8N0.3O1.45) 816416-46-3, Lithium sulfur nitride oxide (Li1.8SN0.3O3.45) 816416-50-9, Boron lithium nitride oxide silicate (B0.5Li2.3N0.3O0.45(SiO4)0.5) 816416-52-1, Germanium lithium nitride oxide silicate (Ge0.5Li3.8N0.3O1.45(SiO4)0.5) 816416-54-3, Carbon lithium nitride oxide silicate (C0.5Li2.8N0.3O2.95(SiO4)0.5) 816416-56-5, Lithium silicon nitride oxide sulfate (Li2.8Si0.5N0.3O1.45(SO4)0.5) 816416-58-7, Germanium lithium borate nitride oxide (Ge0.5Li2.3(BO3)0.5N0.3O0.95) 816416-60-1, Aluminum lithium borate nitride oxide (Al0.5Li2.8(BO3)0.5N0.3O0.95) 816416-62-3, Boron lithium carbonate nitride oxide (B0.5Li1.3(CO3)0.5N0.3O0.45) 816416-64-5, Gallium lithium borate nitride oxide (Ga0.5Li0.8(BO2)0.5N0.3O0.45) 816416-66-7, Boron lithium nitride oxide sulfate (B0.5Li1.3N0.3O0.45(SO4)0.5) 816416-68-9 816416-70-3, Germanium lithium nitride oxide sulfate (Ge0.5Li2.8N0.3O1.45(SO4)0.5) 816416-74-7, Carbon lithium nitride oxide sulfate (C0.5Li1.8N0.3O0.95(SO4)0.5) 882681-95-0, Lithium titanium oxide phosphate (Li2.8Ti0.2O0.3(PO4)) 882682-19-1, Lithium zirconium oxide phosphate (Li4Zr0.25O(PO4)) 882682-64-6, Lithium silicon nitride oxide (Li1.8SiN0.5O2.15) 884739-67-7, Lithium silicon nitride oxide (Li1.8SiN0.3O2.45)

RL: TEM (Technical or engineered material use); USES (Uses)
(inorg. compound. layer for lithium battery)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 2 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2006:189863 HCAPLUS Full-text

DOCUMENT NUMBER: 144:257188

TITLE: Nonaqueous electrolyte secondary battery

INVENTOR(S): Inagaki, Hiroki; Morishima, Hideaki; Tatebayashi, Yoshinao; Sato, Yuji; Takami, Norio

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan

SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060046155	A1	20060302	US 2005-148169	200506 09
			<--	
US 7601463	B2	20091013		
JP 2006066341	A	20060309	JP 2004-250461	200408 30
			<--	
JP 4245532	B2	20090325		
KR 2006050745	A	20060519	KR 2005-79234	200508 29
			<--	
KR 772751	B1	20071101		
CN 1744368	A	20060308	CN 2005-10095962	200508 30
			<--	
CN 100377416	C	20080326		
JP 2009076468	A	20090409	JP 2008-306569	200812 01
			<--	
PRIORITY APPLN. INFO.:			JP 2004-250461 A	200408 30
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A nonaq. electrolyte secondary battery includes: an outer housing; a nonaq. electrolyte filled in the outer housing, a pos. electrode housed in the outer housing, a neg. electrode housed in the outer housing and a separator disposed between the neg. electrode and the pos. electrode. The nonaq. electrolyte comprises a nonaq. solvent including di-Et carbonate and at least one of ethylene carbonate and propylene carbonate, and the nonaq. electrolyte has a

content of the di-Et carbonate of from 80 to 95% by volume The pos. electrode comprises a pos. electrode active substance having a pos. electrode potential in a full charged state of 4.4 V or higher with respect to a potential of metallic lithium. The neg. electrode comprises a neg. electrode active substance having a neg. electrode potential in a full charged state of 1.0 V or higher with respect to a potential of metallic lithium.

IT 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary battery)

RN 188029-35-8 HCAPLUS

CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

INCL 429332000; 429224000; 429231100; 429221000; 429231500; 429223000; 429231300; 429176000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 12031-75-3, Lithium manganese nickel oxide LiMn1.5Ni0.5O4 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12190-79-3, Cobalt lithium oxide (CoLiO2) 13824-63-0, Cobalt lithium phosphate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 90076-65-6 128975-24-6, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 131344-56-4, Cobalt lithium nickel oxide 132843-44-8 162684-16-4, Lithium manganese nickel oxide 177997-16-9, Aluminum lithium manganese nickel oxide 177997-18-1, Lithium manganese nickel tin oxide 178121-38-5, Gallium lithium manganese nickel oxide 182442-95-1, Cobalt lithium manganese nickel oxide 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12) 189217-56-9 193214-25-4, Aluminum cobalt lithium nickel oxide (Al0.05Co0.2LiNi0.75O2) 214536-41-1, Cobalt lithium manganese oxide 233272-63-4, Copper lithium manganese nickel oxide 253868-25-6, Lithium manganese nickel titanium oxide 287719-06-6, Iron lithium manganese nickel oxide 287719-09-9, Lithium magnesium manganese nickel oxide 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 372966-89-7, Lithium manganese nickel zinc oxide 411234-54-3, Iron lithium phosphate 503064-84-4, Lithium magnesium manganese nickel oxide (LiMg0.05Mn1.5Ni0.45O4) 554453-38-2, Iron lithium manganese phosphate 639844-65-8, Lithium manganese nickel zirconium oxide 656812-58-7, Lithium manganese nickel niobium oxide 877035-02-4, Lithium manganese nickel tantalum oxide 877035-03-5, Iron lithium sulfide (FeLi0-4S0.9-2.1)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary battery)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L40 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1103233 HCAPLUS Full-text
DOCUMENT NUMBER: 143:389772
TITLE: In situ thermal polymerization method for making

gel polymer lithium ion rechargeable electrochemical cells
INVENTOR(S): Xing, Weibing; Takeuchi, Esther S.
PATENT ASSIGNEE(S): Greatbatch Ltd., USA
SOURCE: U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050227150	A1	20051013	US 2004-819511	20040407
US 7422826	B2	20080909	<--	

PRIORITY APPLN. INFO.: US 2004-819511 20040407
<--
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A single step, in situ curing method for making gel polymer lithium ion rechargeable cells and batteries is described. This method used a precursor solution consisting of monomers with multiple functionalities such as multiple acryloyl functionalities, a free-radical generating activator, nonaq. solvents such as ethylene carbonate and propylene carbonate, and a lithium salt such as LiPF6. The electrodes are prepared by slurry-coating a carbonaceous material such as graphite onto an anode current collector and a lithium transition metal oxide such as LiCoO2 onto a cathode current collector, resp. The electrodes, together with a highly porous separator, are then soaked with the polymer electrolyte precursor solution and sealed in a cell package under vacuum. The whole cell package is heated to in situ cure the polymer electrolyte precursor. The resulting lithium ion rechargeable cells with gelled polymer electrolyte demonstrate excellent electrochem. properties such as high efficiency in material utilization, high Coulombic efficiency, good rate capability, and good cyclability.

IT 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(in situ thermal polymerization method for making gel polymer lithium ion rechargeable electrochem. cells)
RN 188029-35-8 HCAPLUS
CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

IC ICM H01M010-40
ICS H01M004-58; H01M004-48; H01M004-52; H01M004-54; H01M004-66
INCL 429303000; X42-931.7; X42-930.7; X42-923.18; X42-923.11; X42-923.15; X42-922.3; X42-923.13; X42-923.12; X42-923.17
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate
108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
685-91-6, n,n-Diethylacetamide 1313-13-9, Manganese dioxide, uses
1314-62-1, Vanadium oxide (V2O5), uses 1317-37-9, Iron sulfide
(FeS) 1344-70-3, Copper oxide 2923-17-3 4437-85-8, Butylene
carbonate 7429-90-5, Aluminum, uses 7439-89-6D, Iron,
chalcogenides 7439-96-5D, Manganese, chalcogenides 7439-98-7D,
Molybdenum, chalcogenides 7440-02-0, Nickel, uses 7440-02-0D,
Nickel, chalcogenides 7440-03-1D, Niobium, chalcogenides
7440-06-4, Platinum, uses 7440-25-7, Tantalum, uses 7440-32-6,
Titanium, uses 7440-32-6D, Titanium, chalcogenides 7440-47-3D,
Chromium, chalcogenides 7440-48-4D, Cobalt, chalcogenides
7440-50-8, Copper, uses 7440-50-8D, Copper, chalcogenides
7440-57-5, Gold, uses 7440-62-2D, Vanadium, chalcogenides
7782-42-5, Graphite, uses 7784-01-2, Silver chromate 7789-19-7,
Copper fluoride (CuF2) 7791-03-9, Lithium perchlorate 11101-13-6
11105-02-5, Silver vanadium oxide 12031-65-1, Lithium nickel oxide
(LiNiO2) 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium
manganese oxide (LiMn2O4) 12057-24-8, Lithia, uses 12068-85-8,
Iron sulfide (FeS2) 12162-79-7, Lithium manganese oxide limno2
12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt
lithium oxide (CoLiO2) 12597-68-1, Stainless steel, uses
12789-09-2, Copper vanadium oxide 13453-75-3, Lithium
fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 15955-98-3, Lithium
tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate
20667-12-3, Silver oxide (Ag2O) 21324-40-3, Lithium
hexafluorophosphate 22205-45-4, Copper sulfide (Cu2S)
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 35363-40-7, Ethyl propyl carbonate, uses 51311-17-2,
Carbon fluoride 90076-65-6 115028-88-1 131344-56-4, Cobalt
lithium nickel oxide 132404-42-3 135573-53-4, Cobalt lithium
nickel oxide Co0-1LiNi0-1O2 155645-82-2, Silver oxide (Ag2O2)
181183-66-4, Copper silver vanadium oxide 188029-35-8,
Lithium titanium oxide (Li4-7Ti5O12) 256650-80-3, Cobalt lithium
tin oxide (Co0.92LiSn0.08O2)
RL: DEV (Device component use); USES (Uses)
(in situ thermal polymerization method for making gel polymer lithium
ion rechargeable electrochem. cells)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L40 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1078028 HCAPLUS Full-text
DOCUMENT NUMBER: 143:350011
TITLE: Nonaqueous electrolyte lithium battery
INVENTOR(S): Takami, Norio; Inagaki, Hiroki
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050221188	A1	20051006	US 2005-88762	

				200503 25 <--
JP 2005317512	A	20051110	JP 2005-59842	200503 04 <--
JP 3769291	B2	20060419		
KR 2006044970	A	20060516	KR 2005-26301	200503 30 <--
CN 1677740	A	20051005	CN 2005-10060058	200503 31 <--
CN 100377414	C	20080326		
KR 2008111428	A	20081223	KR 2008-120995	200812 02 <--
KR 955981	B1	20100506		
KR 2009045187	A	20090507	KR 2009-35461	200904 23 <--
PRIORITY APPLN. INFO.:			JP 2004-103854 A	200403 31 <--
			JP 2005-59842 A	200503 04
			KR 2005-26301 A3	200503 30
			KR 2008-120995 A3	200812 02

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A nonaq. electrolyte battery includes a pos. electrode containing an active material, a neg. electrode, and a nonaq. electrolyte, the neg. electrode including a current collector and a neg. electrode active material supported by the current collector, the neg. electrode active material having a Li insertion potential not lower than 0.2 V (vs. Li/Li+) and an average primary particle diameter not larger than 1 μm, and a sp. surface area of the neg. electrode, excluding a weight of the current collector, as determined by the BET method falls within a range of 3 to 50 m2/g.

IT 860397-83-7, Lithium titanium oxide (Li3-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte lithium battery)

RN 860397-83-7 HCAPLUS

CN Lithium titanium oxide (Li3-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	12	17778-80-2
Ti	5	7440-32-6
Li	3 - 7	7439-93-2

IC ICM H01M004-58
ICS H01M004-48; H01M004-52; H01M004-50
INCL 429231950; 429231100; 429231500; 429231300; 429223000; 429224000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 71-50-1, Acetate, uses 96-48-0D, γ-Butyrolactone, alkyl derivative 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 3812-32-6, Carbonate, uses 12031-75-3, Lithium manganese nickel oxide limn1.5ni0.5o4 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12190-79-3, Cobalt lithium oxide (CoLiO2) 14283-07-9, Lithium tetrafluoroborate 14477-72-6, Trifluoroacetate, uses 14797-73-0, Perchlorate 14874-70-5, Tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo4 16919-18-9, Hexafluorophosphate 16973-45-8, Hexafluoroarsenate 17009-90-4D, Imidazolium, alkyl derivative 37181-39-8, Triflate 39302-37-9, Lithium titanium oxide 52627-24-4, Cobalt lithium oxide 65039-03-4, 1-Methyl-3-ethylimidazolium 82113-65-3 130447-45-9 131344-56-4, Cobalt lithium nickel oxide 152894-10-5 162684-16-4, Lithium manganese nickel oxide 168886-50-8, Lithium phosphorus oxide 182442-95-1, Cobalt lithium manganese nickel oxide 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 860397-83-7, Lithium titanium oxide (Li3-7Ti5O12) 865871-85-8, Lithium titanium oxide (Li1-5Ti3O7) 865871-86-9
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte lithium battery)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L40 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1078027 HCAPLUS Full-text
DOCUMENT NUMBER: 143:350010
TITLE: Nonaqueous electrolyte secondary battery
INVENTOR(S): Inagaki, Hiroki; Tatebayashi, Yoshinao; Takami, Norio
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050221187	A1	20051006	US 2005-87618	200503 24
			<--	
US 7629081	B2	20091208		
JP 2005317508	A	20051110	JP 2005-36609	200502 14
			<--	

```
     JP 4346565            B2     20091021
     KR 2006044906         A      20060516    KR 2005-25867
                                                200503
                                                29
                                          <--
     KR 769404             B1     20071022
     CN 1728442            A      20060201    CN 2005-10092257
                                                200503
                                                30
                                          <--
     CN 100367561          C      20080206
PRIORITY APPLN. INFO.:                         JP 2004-99383       A
                                                200403
                                                30
                                          <--
                                               JP 2005-36609       A
                                                200502
                                                14

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB    A nonaq. electrolyte secondary battery includes a case, a nonaq. electrolyte
      provided in the case and containing a linear sulfite, a pos. electrode
      provided in the case and capable of absorbing-releasing at, Li or Li ions, and
      a neg. electrode provided in the case and containing a lithium titanium oxide
      and a conductive agent that includes a carbonaceous material.
IT    188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
      RL: DEV (Device component use); USES (Uses)
         (nonaq. electrolyte secondary battery)
RN    188029-35-8  HCAPLUS
CN    Lithium titanium oxide (Li4-7Ti5O12)  (CA INDEX NAME)

  Component    |       Ratio        |     Component
               |                    |  Registry Number
===============+====================+===================
O              |         12         |       17778-80-2
Ti             |         5          |        7440-32-6
Li             |       4 - 7        |        7439-93-2

IC    ICM  H01M004-58
      ICS  H01M006-18
INCL 429231950; X42-923.18; X42-923.15; X42-931.4
CC    52-2 (Electrochemical, Radiational, and Thermal Energy
      Technology)
IT    96-48-0, γ-Butyrolactone   9002-88-4, Polyethylene
      12031-95-7, Lithium titanium oxide (Li4Ti5O12)   12190-79-3, Cobalt
      lithium oxide (CoLiO2)   39302-37-9, Lithium titanium oxide
      188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
      RL: DEV (Device component use); USES (Uses)
         (nonaq. electrolyte secondary battery)
OS.CITING REF COUNT:     2     THERE ARE 2 CAPLUS RECORDS THAT CITE THIS
                               RECORD (2 CITINGS)
REFERENCE COUNT:         13    THERE ARE 13 CITED REFERENCES AVAILABLE
                               FOR THIS RECORD. ALL CITATIONS AVAILABLE
                               IN THE RE FORMAT

L40  ANSWER 6 OF 27  HCAPLUS  COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER:        2005:672707  HCAPLUS  Full-text
DOCUMENT NUMBER:         143:156361
TITLE:                   Nonaqueous electrolyte battery
INVENTOR(S):             Kishi, Takashi; Saruwatari, Hidesato; Takami,
```

Norio; Inagaki, Hiroki; Kuboki, Takashi
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050164082	A1	20050728	US 2005-42132	200501 26
JP 2005243620	A	20050908	JP 2005-20034	200501 27

PRIORITY APPLN. INFO.: JP 2004-18624 A 200401 27

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A nonaq. electrolyte battery includes a pos. electrode, a neg. electrode containing an active material providing a neg. electrode working potential which is nobler than a lithium electrode potential, and whose p.d. from the lithium electrode potential is 0.5 V or more, and an electrolyte containing molten salt, ester phosphate and metal salt including at least one of alkaline metal salt and alkaline earth metal salt, the electrolyte satisfying the following formula: 0.5≤(M2/M1)≤1 where M1 is a molar number of the metal salt and M2 is a molar number of the ester phosphate.

IT 860397-83-7, Lithium titanium oxide (Li3-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery)
RN 860397-83-7 HCAPLUS
CN Lithium titanium oxide (Li3-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	3 - 7	7439-93-2

IC ICM H01M010-36
ICS H01M010-40; H01M004-52; H01M004-50
INCL 429188000; 429199000; 429231300; 429224000; 429223000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 11126-12-8, Iron sulfide 12163-02-9, Lithium titanium oxide (Li2Ti3O7) 12190-79-3, Cobalt lithium oxide (CoLiO2) 14283-07-9, Lithium tetrafluoroborate 14874-70-5, Tetrafluoroborate 16919-18-9, Hexafluorophosphate 17009-90-4, Imidazolium 21324-40-3, Lithium hexafluorophosphate 39302-37-9, Lithium titanate 65039-03-4, 1-Ethyl-3-methyl imidazolium 80432-06-0, 1-Methyl-3-propyl imidazolium 80432-08-2, 1-Butyl-3-methylimidazolium 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 94530-91-3 123921-35-7,

Lithium titanium oxide (Li1.33Ti1.67O4) 131097-15-9, 1-Ethyl-2,3-dimethylimidazolium 132843-44-8, Lithium bis(pentafluoroethanesulfonyl)imide 174899-73-1 174899-82-2, 1-Ethyl-3-methyl imidazolium bis(trifluoromethanesulfonyl)imide 182442-95-1, Cobalt lithium manganese nickel oxide 195199-57-6, Lithium dicyanamide 860397-83-7, Lithium titanium oxide (Li3-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)

L40 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:283980 HCAPLUS Full-text
DOCUMENT NUMBER: 142:358046
TITLE: Nonaqueous electrolyte secondary battery module
INVENTOR(S): Takami, Norio; Inagaki, Hiroki; Tatebayashi, Yoshinao
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan
SOURCE: U.S. Pat. Appl. Publ., 17 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050069777	A1	20050331	US 2004-943984	20040920 <--
US 7462425	B2	20081209		
TW 240445	B	20050921	TW 2004-93128758	20040922 <--
KR 2005030566	A	20050330	KR 2004-76187	20040923 <--
CN 1601800	A	20050330	CN 2004-10011745	20040924 <--
CN 1333487	C	20070822		
CN 1866606	A	20061122	CN 2006-10087777	20040924 <--
CN 100483839	C	20090429		
JP 2005123183	A	20050512	JP 2004-280719	20040927 <--
JP 3866740	B2	20070110		
US 20090075166	A1	20090319	US 2008-273256	20081118

PRIORITY APPLN. INFO.: JP 2003-336176 A 200309 26 <--
US 2004-943984 A1 200409 20 <--
CN 2004-10011745 A3 200409 24 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A nonaq. electrolyte secondary battery includes a case, a nonaq. electrolyte provided in the case, a pos. electrode provided in the case, and a neg. electrode provided in the case, the neg. electrode comprising a neg. electrode current collector and a neg. electrode layer that is carried on the neg. electrode current collector and contains neg. electrode active material particles, and the neg. electrode current collector comprising an aluminum foil having an average crystal grain size of 50 μm or less or an aluminum alloy foil having an average crystal grain size of 50 μm or less.

IT 848891-89-4, Lithium titanium oxide sulfide (Li3-7TiO12S5)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary battery module)

RN 848891-89-4 HCAPLUS

CN Lithium titanium oxide sulfide (Li3-7TiO12S5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
S	5	7704-34-9
Ti	1	7440-32-6
Li	3 - 7	7439-93-2

IC ICM H01M004-66
ICS H01M004-48; H01M010-40

INCL 429245000; X42-923.11; X42-923.15; X42-933.7

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-48-0, γ-Butyrolactone 11099-20-0 11099-22-2 11114-60-6 11114-64-0 11149-84-1 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12190-79-3, Cobalt lithium oxide (CoLiO2) 12617-27-5 12625-94-4 37263-88-0 39325-85-4 59028-67-0 59392-25-5 848891-89-4, Lithium titanium oxide sulfide (Li3-7TiO12S5)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary battery module)

OS.CITING REF COUNT: 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

L40 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2004:1045287 HCAPLUS Full-text

DOCUMENT NUMBER: 142:180274

TITLE: Chemical and Electrochemical Li-Insertion into the Li4Ti5O12 Spinel

AUTHOR(S): Aldon, L.; Kubiak, P.; Womes, M.; Jumas, J. C.; Olivier-Fourcade, J.; Tirado, J. L.; Corredor,

J. I.; Perez Vicente, C.
CORPORATE SOURCE: Laboratoire des Agregats Moleculaires et Materiaux Inorganiques (UMR 5072 CNRS), Universite Montpellier II, Montpellier, 34095, Fr.
SOURCE: Chemistry of Materials (2004), 16(26), 5721-5725
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Lithium was inserted into the spinel Li4Ti5O12 by both chemical and electrochem. methods. The cation distribution in the lithiated phases was analyzed by 6,7Li NMR, Raman spectroscopy, and x-ray diffraction, and the distribution in the chemical inserted compound was analyzed addnl. by neutron diffraction. A refinement of structural parameters was carried out by applying the Rietveld method to the neutron diffraction pattern. The two insertion methods are based on different mechanisms. Chemical inserted lithium ions are trapped in the (48f) sites of the spinel structure from which they cannot be extracted by electrochem. means. In contrast to the electrochem. Li-insertion, which is accompanied by a spinel to rock salt phase transition, no such structural change is found for chemical insertion. The consequences of the two different mechanisms for the reversibility of the insertion process are discussed.

IT 603111-46-2P, Lithium titanium oxide (Li5.9Ti5O12)
833427-77-3P, Lithium titanium oxide (Li6.8Ti5O12)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(chemical and electrochem. Li-insertion into Li4Ti5O12 spinel crystals)

RN 603111-46-2 HCAPLUS
CN Lithium titanium oxide (Li5.9Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	5.9	7439-93-2

RN 833427-77-3 HCAPLUS
CN Lithium titanium oxide (Li6.8Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	6.8	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 75, 76

IT 603111-46-2P, Lithium titanium oxide (Li5.9Ti5O12)
833427-77-3P, Lithium titanium oxide (Li6.8Ti5O12)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(chemical and electrochem. Li-insertion into Li4Ti5O12 spinel crystals)

OS.CITING REF COUNT: 35 THERE ARE 35 CAPLUS RECORDS THAT CITE THIS

RECORD (36 CITINGS)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2004:938484 HCAPLUS Full-text
DOCUMENT NUMBER: 142:117471
TITLE: Electrochemistry and local structure of nano-sized Li4/3Me5/3O4 (Me=Mn, Ti) spinels
AUTHOR(S): Julien, C. M.; Zaghib, K.
CORPORATE SOURCE: Laboratoire des Milieux Desordonnes et Heterogenes, CNRS-UMR 7603 Universite Pierre et Marie Curie, Paris, 75252, Fr.
SOURCE: Electrochimica Acta (2004), 50(2-3), 411-416
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The structural and electrochem. characteristics of Li4/3Me5/3O4 (Me = Ti, Mn) spinel with nanostructured morphol. were studied using Raman and FTIR spectroscopy. Vibrational features are in concordance with the factor group anal. - Oh7 symmetry. The zero-strain insertion material, Li4/3Ti5/3O4, delivers 150 mA-h/g while Li4/3Mn5/3O4 inserts 2.8 Li/mol of oxide leading to a sp. capacity of 158 mA-h/g.
IT 820979-06-4, Lithium manganese oxide (Li6.5Mn5O12)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(characteristics of nano-sized spinel Li4/3Me5/3O4 (Me=Mn,Ti) electrode material for lithium batteries and supercapacitors)
RN 820979-06-4 HCAPLUS
CN Lithium manganese oxide (Li6.5Mn5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mn	5	7439-96-5
Li	6.5	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 76
IT 12031-92-4, Lithium manganese oxide (Li4Mn5O12) 123921-35-7, Lithium titanium oxide (Li1.33Ti1.67O4) 820979-06-4, Lithium manganese oxide (Li6.5Mn5O12)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(characteristics of nano-sized spinel Li4/3Me5/3O4 (Me=Mn,Ti) electrode material for lithium batteries and supercapacitors)
OS.CITING REF COUNT: 16 THERE ARE 16 CAPLUS RECORDS THAT CITE THIS RECORD (16 CITINGS)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2004:906086 HCAPLUS Full-text
DOCUMENT NUMBER: 141:382165
TITLE: Solid electrolyte and total solid secondary battery containing the electrolyte

INVENTOR(S): Ugaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004093236	A1	20041028	WO 2004-JP5424	20040415
			<--	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004335455	A	20041125	JP 2004-119042	20040414
			<--	
JP 3690684	B2	20050831		
EP 1630893	A1	20060301	EP 2004-727754	20040415
			<--	
R: DE, FR, GB				
CN 1751409	A	20060322	CN 2004-80004511	20040415
			<--	
CN 100337362	C	20070912		
US 20060216611	A1	20060928	US 2005-551935	20051004
			<--	
US 7514181	B2	20090407		
PRIORITY APPLN. INFO.:			JP 2003-113850 A	20030418
			<--	
			WO 2004-JP5424 W	20040415
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The electrolyte, comprising Li, O, P and a transition metal element, is represented by LixSTyOz (T = transition metal; x =2-7; y = 0.01-1; and z = 3.5-8). The battery has the above electrolyte between a cathode and an anode.

IT 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

RN 782495-76-5 HCAPLUS

CN Lithium tungsten oxide phosphate (Li7W2O8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
O4P	1	14265-44-2
W	2	7440-33-7
Li	7	7439-93-2

IC ICM H01M010-36
ICS H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 782495-23-2, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-40-3, Lithium metaphosphate oxide (Li2.8(PO3)O0.9) 782495-41-4, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9) 782495-44-7, Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) 782495-45-8, Lithium tungsten metaphosphate oxide (Li2.8W0.52(PO3)O0.9) 782495-46-9, Lithium tungsten metaphosphate oxide (Li2.8W0.6(PO3)O0.9) 782495-47-0, Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) 782495-48-1, Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) 782495-49-2, Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) 782495-50-5, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) 782495-51-6, Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) 782495-52-7, Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) 782495-53-8, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9, Lithium zirconium

oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-55-0, Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) 782495-56-1, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-57-2, Lithium silver phosphate (Li2.8Ag0.2(PO4)) 782495-58-3, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-61-8, Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4)) 782495-62-9, Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4)) 782495-63-0, Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) 782495-64-1, Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) 782495-65-2, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) 782495-66-3, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) 782495-69-6, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) 782495-74-3, Lithium tungsten oxide phosphate (Li5WO4(PO4)) 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2004:792654 HCAPLUS Full-text
DOCUMENT NUMBER: 142:77446
TITLE: Moessbauer Spectrometry as a Powerful Tool to Study Lithium Reactivity Mechanisms for Battery Electrode Materials
AUTHOR(S): Aldon, L.; Kubiak, P.; Picard, A.; Lippens, P. E.; Olivier-Fourcade, J.; Jumas, J.-C.
CORPORATE SOURCE: Laboratoire des Agregats Moleculaires et Materiaux Inorganiques (UMR 5072 CNRS), Universite Montpellier II, Montpellier, 34095, Fr.
SOURCE: Hyperfine Interactions (2004), 156/157(1-4), 497-503
CODEN: HYINDN; ISSN: 0304-3843
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The use of 57Fe as a local Moessbauer probe is of interest to study mechanisms of Li insertion. The substitutions, Ti/Fe and Li/Fe, were carried out for Li4Ti5O12 to obtain Fe-substituted spinel and Li2Ti3O7 ramsdellite. In the case of Li4Ti5O12, Fe ions are reduced (FeIII → FeII), then migrate from tetrahedral to octahedral sites, allowing one to establish the spinel ↔ rocksalt phase transition. Such a phase transition explains the well-defined plateau observed in electrochem. potential curves. In the case of Li2Ti3O7 ramsdellite, all the Fe ions are located in octahedral sites and the quadrupole splittings are related to the number of Li in the neighborhood of probed atoms.

IT 812665-31-9, Iron lithium titanium oxide (Fe0.25Li6.28Ti4.75O12) 812665-32-0, Iron lithium titanium oxide (Fe0.25Li6.45Ti4.75O12)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(Moessbauer spectrometry of lithium insertion mechanisms in iron-doped lithium titanates for lithium battery anodes)

RN 812665-31-9 HCAPLUS
CN Iron lithium titanium oxide (Fe0.25Li6.28Ti4.75O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	4.75	7440-32-6
Li	6.28	7439-93-2
Fe	0.25	7439-89-6

RN 812665-32-0 HCAPLUS
CN Iron lithium titanium oxide (Fe0.25Li6.45Ti4.75O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	4.75	7440-32-6
Li	6.45	7439-93-2
Fe	0.25	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 67, 73
IT 603111-48-4, Iron lithium titanium oxide (Fe0.25Li4.25Ti4.75O12)
812665-29-5, Iron lithium titanium oxide (Fe0.25Li4.4Ti4.75O12)
812665-30-8, Iron lithium titanium oxide (Fe0.25Li4.5Ti4.75O12)
812665-31-9, Iron lithium titanium oxide (Fe0.25Li6.28Ti4.75O12) 812665-32-0, Iron lithium titanium oxide (Fe0.25Li6.45Ti4.75O12) 812665-33-1, Iron lithium titanium oxide (Fe0.13Li2.29Ti2.83O7) 812665-34-2, Iron lithium titanium oxide (Fe0.13Li2.44Ti2.83O7) 812665-35-3, Iron lithium titanium oxide (Fe0.13Li2.99Ti2.83O7) 812665-36-4, Iron lithium titanium oxide (Fe0.13Li3.59Ti2.83O7) 812665-37-5, Iron lithium titanium oxide (Fe0.13Li3.74Ti2.83O7)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(Moessbauer spectrometry of lithium insertion mechanisms in iron-doped lithium titanates for lithium battery anodes)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2003:796193 HCAPLUS Full-text
DOCUMENT NUMBER: 139:310049
TITLE: Batteries comprising alkali-transition metal phosphates and preferred electrolytes
INVENTOR(S): Pugh, James; Saidi, Mohammed Y.; Huang, Haitao
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 20030190527	A1	20031009	US 2002-116276	20020403
			<--	
CA 2479790	A1	20031016	CA 2003-2479790	20030327
			<--	
WO 2003085757	A1	20031016	WO 2003-US9634	20030327
			<--	

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003224801	A1	20031020	AU 2003-224801	20030327
			<--	
EP 1490917	A1	20041229	EP 2003-721492	20030327
			<--	

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

JP 2005522009	T	20050721	JP 2003-582838	20030327
			<--	
CN 1650450	A	20050803	CN 2003-810033	20030327
			<--	
US 20050181283	A1	20050818	US 2005-80605	20050315
			<--	
PRIORITY APPLN. INFO.:			US 2002-116276 A	20020403
			<--	
			WO 2003-US9634 W	20030327
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Lithium batteries comprising: (a) an electrode comprising a material AaMb(XY4)cZd , wherein (i) A is an alkali metal and 0<a≤9; (ii) M comprises a transition metal, and 1≤b≤3; (iii) XY4 is X'O4-x Y'x, X'O4-yY'2y, X''S4, or

mixts. thereof, where X' is P, As, Sb, Si, Ge, V, S, or mixts. thereof; X'' is P, As, Sb, Si, Ge, V, or mixts. thereof; Y' is halogen, S, N, or mixts. thereof; $0 \leq x < 3$; and $0 < y \leq 2$; and $0 < c \leq 3$; and (iv) Z is OH, halogen, or mixts. thereof, and $0 \leq d \leq 6$; and (b) a counter-electrode; and (c) an electrolyte comprising an alkyl and/or alkylene carbonate and a cyclic ester. Preferably, M addnl. comprises at least one non-transition metal. Preferred embodiments include those having an olivine structure, where c = 1, and those having a NASICON structure, where c = 3.

IT 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

IC ICM H01M004-58

INCL 429231900; 429231950; 429221000; 429223000; 429231500; 429224000; 429231600

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

IT 477779-87-6P, Sodium vanadium fluoride phosphate NaVF(PO4) 484040-01-9P, Iron lithium magnesium fluoride phosphate Fe0.9Li1.25Mg0.1F0.25(PO4) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-28-0P 610272-07-6P 610311-01-8P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L40 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2003:437493 HCAPLUS Full-text

DOCUMENT NUMBER: 139:263189

TITLE: Phase transition in the spinel Li4Ti5O12 induced by lithium insertion Influence of the substitutions Ti/V, Ti/Mn, Ti/Fe

AUTHOR(S): Kubiak, Pierre; Garcia, Aurelie; Womes, Manfred; Aldon, Laurent; Olivier-Fourcade, Josette; Lippens, Pierre-Emmanuel; Jumas, Jean-Claude

CORPORATE SOURCE: Laboratoire des Agregats Moleculaires et Materiaux Inorganiques (UMR 5072 CNRS), Universite Montpellier II, Montpellier, 34095, Fr.

SOURCE: Journal of Power Sources (2003), 119-121, 626-630
CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The spinel Li4Ti5O12, a stable phase of the Li2O-TiO2 system, allows to insert three Li atoms per formula unit at a potential of 1.5 V on the basis of a spinel ↔ NaCl phase transition. This mechanism leads to a reduction of three Ti(IV) atoms out of five, corresponding to a theor. capacity of 175 mAh/g. The influence of structural defaults on the spinel NaCl phase transition and its reversibility during charge/discharge cycles have been studied. Solid solns. formed from chemical insertion of lithium or substitutions Ti/V, Ti/Mn, Ti/Fe modify the cation distribution on the crystallog. sites (tetrahedral 8a, octahedral 16d, space group Fd3m) and influence the electrochem. performances. A structural anal. by X-ray and neutron diffraction, X-ray absorption, 57Fe Mossbauer spectroscopy and first principle calcns. have allowed to establish a relationship between the structure and the electrochem. properties.

IT 603111-46-2, Lithium titanium oxide (Li5.9Ti5O12)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effect of substitutions Ti/V, Ti/Mn, Ti/Fe on phase transition in spinel Li4Ti5O12 induced by lithium insertion)

RN 603111-46-2 HCAPLUS
CN Lithium titanium oxide (Li5.9Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	5.9	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 68

IT 12031-95-7, Lithium titanium oxide Li4Ti5O12 219737-80-1, Lithium manganese titanium oxide Li4Mn0.5Ti4.5O12 603111-46-2, Lithium titanium oxide (Li5.9Ti5O12) 603111-47-3, Lithium titanium vanadium oxide (Li4Ti4.75V0.25O12) 603111-48-4, Iron lithium titanium oxide (Fe0.25Li4.25Ti4.75O12)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effect of substitutions Ti/V, Ti/Mn, Ti/Fe on phase transition in spinel Li4Ti5O12 induced by lithium insertion)

OS.CITING REF COUNT: 29 THERE ARE 29 CAPLUS RECORDS THAT CITE THIS RECORD (30 CITINGS)
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2003:435148 HCAPLUS Full-text
DOCUMENT NUMBER: 138:388239
TITLE: In situ thermal polymerization method for making gel polymer lithium ion rechargeable electrochemical cells
INVENTOR(S): Xing, Weibing; Takeuchi, Esther S.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030104282	A1	20030605	US 2001-883 <--	200111 15
PRIORITY APPLN. INFO.:			US 2001-883 <--	200111 15

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A single step, in situ curing method for making gel polymer lithium ion rechargeable cells and batteries is disclosed. This method used a precursor solution consisting of monomers with multiple functionalities such as multiple acryloyl functionalities, a free-radical generating activator, nonaq. solvents such as ethylene carbonate and propylene carbonate, and a lithium salt such as LiPF6. The electrodes are prepared by slurry-coating a carbonaceous material such as graphite onto an anode current collector and a lithium transition metal oxide such as LiCoO2 onto a cathode current collector, resp. The electrodes, together with a highly porous separator, are then soaked with the polymer electrolyte precursor solution and sealed in a cell package under vacuum. The whole cell package is heated to in situ cure the polymer electrolyte precursor. The resulting lithium ion rechargeable cells with gelled polymer electrolyte demonstrate excellent electrochem. properties such as high efficiency in material utilization, high Coulombic efficiency, good rate capability, and good cyclability.

IT 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(in-situ thermal polymerization method for making gel polymer lithium ion rechargeable electrochem. cells)

RN 188029-35-8 HCAPLUS

CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

IC ICM H01M010-40
ICS H01M004-58; H01M004-66

INCL 429303000; 429189000; 429231800; 429245000; 429231100; 029623100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate 685-91-6, n,n-Diethylacetamide 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide (NiO), uses 1314-62-1, Vanadia, uses 1317-37-9, Iron sulfide (FeS) 1332-37-2, Iron oxide, uses 1344-70-3, Copper oxide 2923-17-3 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses 7784-01-2, Silver chromate 7789-19-7, Copperfluoride (CuF2) 7791-03-9, Lithium perchlorate 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide 11113-75-0, Nickel sulfide 11115-76-7, Cobalt selenide 11115-77-8, Cobalt telluride

11115-78-9, Copper sulfide 11115-99-4, Nickel selenide
11116-00-0, Nickel telluride 11118-57-3, Chromium oxide
11126-12-8, Iron sulfide 11129-60-5, Manganese oxide 11130-24-8,
Vanadium sulfide 12031-65-1, Lithium nickel oxide (LiNiO2)
12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese
oxide (LiMn2O4) 12057-24-8, Lithia, uses 12068-85-8, Iron
sulfide (FeS2) 12162-79-7, Lithium manganese oxide (LiMnO2)
12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt
lithium oxide (CoLiO2) 12612-50-9, Molybdenum sulfide
12623-97-1, Chromium sulfide 12627-00-8, Niobium oxide
12653-56-4, Cobalt sulfide 12673-92-6, Titanium sulfide
12687-82-0, Manganese sulfide 12789-09-2, Copper vanadium oxide
12795-09-4, Copper telluride 13453-75-3 13463-67-7, Titanium
oxide, uses 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,
Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
hexafluoroantimonate 20667-12-3, Silver oxide (Ag2O) 21324-40-3,
Lithium hexafluorophosphate 22205-45-4, Copper sulfide (Cu2S)
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 35363-40-7, Ethyl propyl carbonate 37320-90-4,
Manganese selenide 37359-15-2, Copper selenide 39290-91-0,
Niobium sulfide 39361-71-2, Titanium telluride 50808-87-2,
Molybdenum telluride 50814-22-7, Chromium telluride 50926-12-0,
Iron selenide 50926-13-1, Iron telluride 51311-17-2, Carbon
fluoride 54183-54-9, Molybdenum selenide 54427-25-7, Vanadium
telluride 58319-81-6, Manganese telluride 64176-75-6, Niobium
selenide 66675-50-1, Titanium selenide 66675-60-3, Chromium
selenide 90076-65-6 115028-88-1 131344-56-4, Cobalt lithium
nickel oxide 132404-42-3 135751-98-3, Vanadium selenide
162124-03-0, Niobium telluride 181183-66-4, Copper Silver vanadium
oxide 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
423734-10-5, Cobalt lithium nitride (Co0.1-0.6Li2.4-2.9N)
423734-14-9, Lithium nickel nitride (Li2.4-2.9Ni0.1-0.6N)
527698-30-2, Copper lithium tin oxide (Cu0.92LiSn0.08O2)
RL: DEV (Device component use); USES (Uses)
(in-situ thermal polymerization method for making gel polymer lithium
ion rechargeable electrochem. cells)

OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (12 CITINGS)

L40 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2003:97868 HCAPLUS Full-text
DOCUMENT NUMBER: 138:140078
TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): Valence Technology Inc., UK
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. 6,387,568.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
---	---	---	---	---

```
US 20030027049       A1    20030206    US 2001-14822
                                                      200110
                                                      26
                                         <--
US 6777132           B2    20040817
US 6387568           B1    20020514    US 2000-559861
                                                      200004
                                                      27
                                         <--
AT 317157            T     20060215    AT 2001-916649
                                                      200103
                                                      14
                                         <--
TW 503596            B     20020921    TW 2001-90109979
                                                      200104
                                                      26
                                         <--
US 20030013019       A1    20030116    US 2001-45685
                                                      200111
                                                      07
                                         <--
US 6964827           B2    20051115
US 20020168573       A1    20021114    US 2002-133091
                                                      200204
                                                      26
                                         <--
US 6855462           B2    20050215
CA 2463872           A1    20030508    CA 2002-2463872
                                                      200210
                                                      18
                                         <--
WO 2003038930        A2    20030508    WO 2002-US33510
                                                      200210
                                                      18
                                         <--
WO 2003038930        A3    20040422
    W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
        CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
        GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
        LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
        NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
        TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
    RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
        BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
        EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR,
        BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
        TG
AU 2002337911        A1    20030512    AU 2002-337911
                                                      200210
                                                      18
                                         <--
EP 1444744           A2    20040811    EP 2002-773814
                                                      200210
                                                      18
                                         <--
    R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
        PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK
CN 1659728           A     20050824    CN 2002-821019
                                                      200210
                                                      18
```

<--

CN 100517817	C	20090722		
JP 2006516172	T	20060622	JP 2003-541083	200210 18
			<--	
US 20040265695	A1	20041230	US 2004-870135	200406 16
			<--	
US 7214448	B2	20070508		
US 20060014078	A1	20060119	US 2005-223082	200509 09
			<--	
US 7270915	B2	20070918		
US 20070009800	A1	20070111	US 2006-531824	200609 14
			<--	
US 7524584	B2	20090428		
US 20070190425	A1	20070816	US 2007-734678	200704 12
			<--	
US 20080241043	A1	20081002	US 2008-135271	200806 09
			<--	

PRIORITY APPLN. INFO.:	US 2000-559861	A2	200004 27
	<--		
	US 2001-14822	A2	200110 26
	<--		
	US 2001-45685	A3	200111 07
	<--		
	WO 2002-US33510	W	200210 18
	<--		
	US 2004-870135	A2	200406 16
	<--		
	US 2007-734678	A2	200704 12

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB An electroactive material comprises: AaMb(XY4)cZd, wherein (a) A is selected from the group consisting of Li, Na, and/or K, and a = 0-8; (b) M is ≥1 metal, comprising ≥1 metal which is capable of undergoing oxidation to a higher valence state, and b = 1-3; (c) XY4 is selected from the group consisting of X'O4-xY'x, X'O4-yY'2y, X''S4, and mixts. thereof, where X' is P, As, Sb, Si, and/or Ge; X'' is P, As, Sb, Si, and/or Ge; Y' is halogen, x = 0-3; and y = 0-

4; and c = 0-3; (d) Z is OH and/or halogen, d = 0-6; and wherein M, X, Y, Z, a, b, c, d, x, and y are selected so as to maintain the electroneutrality of the compound Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a ≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

IC ICM H01M004-58
ICS C01B017-98; C01B025-10; C01B033-08

INCL 429231950; 429231900; 429221000; 429223000; 429224000; 429220000; 429231500; 429222000; 423332000; 423341000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

IT 52934-02-8P, Cobalt lithium fluoride phosphate 52934-08-4P, Lithium nickel fluoride phosphate 257892-19-6P, Sodium vanadium fluoride phosphate (Na3V2F3(PO4)2) 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 477779-89-8P, Lithium sodium vanadiumfluoride phosphate (Li0.95Na0.05VF(PO4)) 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-88-5P 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P, Iron lithium magnesium fluoride phosphate (Fe0.9Li1.25Mg0.1F0.25(PO4)) 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P, Lithium sodium vanadiumfluoride phosphate (Li0.1Na0.9VF(PO4)) 484040-13-3P, Sodium vanadium hydroxide phosphate NaVOHPO4 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3)) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3)) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P, Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2) 484040-27-9P 484040-28-0P 493025-03-9P, Lithium manganese fluoride phosphate 493025-04-0P, Copper lithium fluoride phosphate
RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

REFERENCE COUNT: 134 THERE ARE 134 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2003:42884 HCAPLUS Full-text

DOCUMENT NUMBER: 138:92874

TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials

INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffery L.

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U. S. 6,387,568.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 6

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030013019	A1	20030116	US 2001-45685 <--	20011107
US 6964827	B2	20051115		
US 6387568	B1	20020514	US 2000-559861 <--	20000427
US 20030027049	A1	20030206	US 2001-14822 <--	20011026
US 6777132	B2	20040817		
US 20050142056	A1	20050630	US 2005-905649 <--	20050114
US 7261977	B2	20070828		
US 20060014078	A1	20060119	US 2005-223082 <--	20050909
US 7270915	B2	20070918		
PRIORITY APPLN. INFO.:			US 2000-559861 A2 <--	20000427
			US 2001-14822 A2	20011026

<--
US 2001-45685 A1 200111 07
<--
US 2002-133091 A1 200204 26
<--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Electrode active materials comprise lithium or other alkali metals, a transition metal, a phosphate or similar moiety, and a halogen or hydroxyl moiety. Such electrode actives include those of the formula: AaMb(XY4)cZd wherein (a) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and 0<a≤6; (b) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidation to a higher valence state, and 1≤b≤3; (c) XY4 is selected from the group consisting of X'O4-xY'Xx, X'O4-yY'2y , X''S4, and mixts. thereof, where X' is P, As, Sb, Si, Ge, S, and mixts. thereof; X'' is P, As, Sb, Si, Ge and mixts. thereof; Y' is halogen; 0≤x<3; and 0<y<4; and 0<c≤3; (d) Z is OH, halogen, or mixts. thereof, and 0<d≤6; and wherein M, X, Y, Z, a, b, c, d, x and y are selected so as to maintain electroneutrality of the compound In a preferred embodiment, M comprises two or more transition metals from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'1-mM''m, where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; M'' is at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and 0<m<1. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

IC ICM H01M004-58
ICS C01B025-45; C01B025-30

INCL 429231900; X42-923.195; X42-922.1; X42-922.3; X42-922.0; X42-922.4; X42-923.15; X42-923.16; X42-330.6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 52934-02-8P, Cobalt lithium fluoride phosphate 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium

fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P 484040-13-3P, Sodium vanadium hydroxide phosphate (NaV(OH)(PO4)) 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P 484040-27-9P 484040-28-0P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 127 THERE ARE 127 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2002:818601 HCAPLUS Full-text
DOCUMENT NUMBER: 138:207693
TITLE: Electrochemical impedance spectroscopy analyses on the processes of Li intercalation into Li4Ti5O12
AUTHOR(S): Huang, H.; Kelder, E. M.; Simon, D. R.; Schoonman, J.
CORPORATE SOURCE: Delft Interfaculty Research Center: Renewable Energy Laboratory for Inorganic Chemistry, Delft University of Technology, Delft, 2628 BL, Neth.
SOURCE: Proceedings - Electrochemical Society (2001), 2000-21(Rechargeable Lithium Batteries), 137-143
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The Electrochem. Impedance Spectra of a Li/Li4Ti5O12 cell as a function of the state of charge has been analyzed and the processes of Li intercalation into Li4Ti5O12/carbon composite electrode have been discussed. There are primarily four stages concerning lithium intercalation into Li4Ti5O12/carbon composite electrode. (1) Li-ions accumulate on the Li4Ti5O12 surface to form a space-charge layer with a small portion of Li-ions incorporate into the Li4Ti5O12 lattice followed by a diffusion and phase transition process (Li4Ti5O12→Li7Ti5O12) in the spinel structure. (2) Capacitance of the space charge layer increased continuously while, in the electrode, the phase transition process plays a dominant role. (3) The phase transition controls the electrode kinetics. The capacitance of the space charge layer becomes insignificant. (4) The reaction between Li and Li4Ti5O12 completes. The passivation process on the surface of carbon dominates the electrode kinetics. Capacitance of the space charge layer keeps on a certain level.

IT 132110-16-8, Lithium titanium oxide Li7Ti5O12
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(formation of, during intercalation by phase transformation;

electrochem. impedance spectroscopy analyses on processes of Li intercalation into Li4Ti5O12)
RN 132110-16-8 HCAPLUS
CN Lithium titanium oxide (Li7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	7	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT 132110-16-8, Lithium titanium oxide Li7Ti5O12
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(formation of, during intercalation by phase transformation; electrochem. impedance spectroscopy analyses on processes of Li intercalation into Li4Ti5O12)
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2002:391427 HCAPLUS Full-text
DOCUMENT NUMBER: 136:372303
TITLE: Double current collector anode design for alkali metal ion electrochemical cells
INVENTOR(S): Gan, Hong; Rubino, Robert S.; Takeuchi, Esther S.
PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1207571	A2	20020522	EP 2001-127533	200111 18 <--
EP 1207571	A3	20050824		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 20020061446	A1	20020523	US 2001-8977	200111 08 <--
US 6737191	B2	20040518		
JP 2002198061	A	20020712	JP 2001-349778	200111 15 <--

```
     CA 2363162          A1    20020517    CA 2001-2363162
                                                        200111
                                                        16
                                          <--
     JP 2002198035       A     20020712    JP 2001-351632
                                                        200111
                                                        16
                                          <--
     JP 2002203607       A     20020719    JP 2001-351633
                                                        200111
                                                        16
                                          <--
     JP 2002237334       A     20020823    JP 2001-390626
                                                        200111
                                                        16
                                          <--
     JP 2002270162       A     20020920    JP 2001-390625
                                                        200111
                                                        16
                                          <--
     JP 2002237310       A     20020823    JP 2001-395430
                                                        200111
                                                        19
                                          <--
PRIORITY APPLN. INFO.:                    US 2000-249688P     P
                                                        200011
                                                        17
                                          <--
                                          US 2001-8977        A
                                                        200111
                                                        08
                                          <--
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB    A new sandwich neg. electrode design for a secondary cell is provided
      comprising a "sacrificial" alkali metal along with a carbonaceous anode
      material.  In the case of a hard carbon anode material, the sacrificial alkali
      metal is preferably lithium and is sized to compensate for the initial
      irreversible capacity of this anode material.  Upon activating the cells, the
      lithium metal automatically intercalates into the hard carbon anode material.
      That way, the sacrificial lithium is consumed and compensates for the
      generally unacceptable irreversible capacity of hard carbon. The superior
      cycling longevity of hard carbon now provides a secondary cell of extended use
      beyond that known for conventional secondary cells having only graphitic anode
      materials.
IT    188029-35-8, Lithium titanium oxide Li4-7Ti5O12
      RL: DEV (Device component use); USES (Uses)
         (double current collector anode design for alkali metal ion
         electrochem. cells)
RN    188029-35-8  HCAPLUS
CN    Lithium titanium oxide (Li4-7Ti5O12)  (CA INDEX NAME)

  Component   |       Ratio        |     Component
              |                    |  Registry Number
==============+====================+==================
O             |         12         |       17778-80-2
Ti            |         5          |        7440-32-6
Li            |       4 - 7        |        7439-93-2

IC    ICM  H01M004-02
      ICS  H01M004-36; H01M004-66; H01M010-40
```

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63
IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-29-2, γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium pentoxide, uses 1317-37-9, Iron sulfide fes 1344-70-3, Copper oxide 2923-17-3 5137-45-1, 1-Ethoxy-2-methoxyethane 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 7784-01-2, Silver chromate 7791-03-9, Lithium perchlorate 11105-02-5, Silver vanadium oxide 12019-06-6, Copper dioxide 12031-65-1, Lithium nickel oxide linio2 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide limn2o4 12057-24-8, Lithia, uses 12068-85-8, Iron sulfide fes2 12162-79-7, Lithium manganese oxide limno2 12162-92-4, Lithium vanadium oxide liv2o5 12190-79-3, Cobalt lithium oxide colio2 12789-09-2, Copper vanadium oxide 13453-75-3, Fluorosulfuric acid, lithium salt 13478-41-6, Copper fluoride Cuf 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18282-10-5, Tin dioxide 18424-17-4, Lithium hexafluoroantimonate 20667-12-3, Silver oxide ag2o 21324-40-3, Lithium hexafluorophosphate 21651-19-4, Tin monoxide 22205-45-4, Copper sulfide cu2s 25455-73-6, Silver oxide ag2o2 29935-35-1, Lithium hexafluoroarsenate 33454-82-9 35363-40-7, Ethyl propyl carbonate, uses 51311-17-2, Carbon fluoride 56525-42-9, Methyl propyl carbonate, uses 90076-65-6 113443-18-8, Silicon oxide SiO 115028-88-1 131344-56-4, Cobalt lithium nickel oxide 132404-42-3 181183-66-4, Copper silver vanadium oxide 188029-35-8, Lithium titanium oxide Li4-7Ti5O12 256650-80-3, Cobalt lithium tin oxide Co0.92LiSn0.08O2 423734-10-5, Cobalt lithium nitride (Co0.1-0.6Li2.4-2.9N) 423734-14-9, Lithium nickel nitride (Li2.4-2.9Ni0.1-0.6N)
RL: DEV (Device component use); USES (Uses)
(double current collector anode design for alkali metal ion electrochem. cells)
OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2002:119684 HCAPLUS Full-text
DOCUMENT NUMBER: 136:170268
TITLE: Secondary lithium battery
INVENTOR(S): Hanabusa, Kiyoshi; Ishida, Hirokazu
PATENT ASSIGNEE(S): Mitsubishi Electric Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002050357	A	20020215	JP 2000-232868	200008 01 <--

PRIORITY APPLN. INFO.: JP 2000-232868 200008 01 <--

AB The battery use a cathode active mass layer containing spinel type Li Mn oxide. The cathode active mass layer contains Li7Mn5O12, Li5Mn4O9 and/or Li4Mn4O8.

IT 188666-78-6, Lithium manganese oxide (Li7Mn5O12)
RL: DEV (Device component use); USES (Uses)
(compns. of spinel type lithium manganese oxides for cathodes in secondary lithium batteries)

RN 188666-78-6 HCAPLUS

CN Lithium manganese oxide (Li7Mn5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mn	5	7439-96-5
Li	7	7439-93-2

IC ICM H01M004-58
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12162-79-7, Lithium manganese oxide (LiMnO2) 129317-40-4, Lithium manganese oxide (Li5Mn4O9) 188666-78-6, Lithium manganese oxide (Li7Mn5O12)
RL: DEV (Device component use); USES (Uses)
(compns. of spinel type lithium manganese oxides for cathodes in secondary lithium batteries)

L40 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2001:564109 HCAPLUS Full-text
DOCUMENT NUMBER: 135:125021
TITLE: secondary lithium ion batteries
INVENTOR(S): Shibata, Yasufumi
PATENT ASSIGNEE(S): Toyota Motor Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001210328	A	20010803	JP 2000-18298	200001 27

<--

JP 3546793 B2 20040728
PRIORITY APPLN. INFO.: JP 2000-18298
200001
27

<--

AB The batteries contain Li7Ti5O12 as cathode active mass.
IT 132110-16-8, Lithium titanium oxide (Li7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(lithium titanium oxide for cathodes in secondary lithium batteries)
RN 132110-16-8 HCAPLUS
CN Lithium titanium oxide (Li7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	7	7439-93-2

IC ICM H01M004-58
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 132110-16-8, Lithium titanium oxide (Li7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(lithium titanium oxide for cathodes in secondary lithium batteries)

L40 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2000:624947 HCAPLUS Full-text
DOCUMENT NUMBER: 133:225544
TITLE: Manufacture of mixed oxide cathode active materials for secondary nonaqueous electrolyte batteries
INVENTOR(S): Tamachi, Tsuneaki; Watanabe, Shunji; Onodera, Hideharu; Kanno, Yoshimi; Sakai, Tsugio
PATENT ASSIGNEE(S): Seiko Instruments, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000243399	A	20000908	JP 1999-363032	199912 21

<--

PRIORITY APPLN. INFO.: JP 1998-370919 A
199812
25

<--

AB The cathode active materials containing (Li2O)x(MnO2)5 (x = 0.2-6) having spinel-type crystal structures are manufactured by mechanochem. reaction of Mn oxide with LiOH under dehumidified atmospheric and heating of the resulting

reaction precursors. Secondary nonaq. electrolyte batteries using the active materials show high discharge capacity and long cycle life.

IT 291525-06-9P, Lithium manganese oxide (Li0.4-12Mn5O10.2-16)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manufacture of spinel-type Li Mn oxide cathode active materials for secondary nonaq. electrolyte batteries)

RN 291525-06-9 HCAPLUS
CN Lithium manganese oxide (Li0.4-12Mn5O10.2-16) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	10.2 - 16	17778-80-2
Mn	5	7439-96-5
Li	0.4 - 12	7439-93-2

IC ICM H01M004-58
ICS C01G045-00; H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 291525-06-9P, Lithium manganese oxide (Li0.4-12Mn5O10.2-16)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manufacture of spinel-type Li Mn oxide cathode active materials for secondary nonaq. electrolyte batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L40 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2000:394418 HCAPLUS Full-text
DOCUMENT NUMBER: 133:61263
TITLE: Cathode properties of Nasicon-type LixM2(MoO4)3 for lithium secondary batteries
AUTHOR(S): Okada, Shigeto; Takada, Tomoo; Egashira, Minato; Yamaki, Jun-Ichi; Tabuchi, Mitsuharu; Kageyama, Hiroyuki; Kodama, Teruo; Kanno, Ryoji
CORPORATE SOURCE: IAMS, Kyushu University, Kasuga, 816-8580, Japan
SOURCE: Proceedings - Electrochemical Society (2000), 99-24(Intercalation Compounds for Battery Materials), 237-248
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB NASICON-related Fe2(MoO4)3 shows 3.0 V and 1.7 V plateaus on its discharge profile. The discrepancy of the Fe3+/Fe2+ redox potential in Fe2(XO4)3 (X:S, Mo and W) was investigated by XPS. In addition, to clarify the origin of each discharge plateau of Fe2(MoO4)3, the discharge profiles of M2(XO4)3 (M:Fe, Al; X:Mo, W) were compared. Al2(MoO4)3 has only a 1.7 V plateau on discharge, which means the 3.0 V plateau corresponds to the Fe3+/Fe2+ redox reaction. The reversible capacity of Al2(MoO4)3 reached almost 200 mAh/g between 3.5 V and 1.2 V.

IT 278174-30-4, Iron lithium molybdenum oxide
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(cathode properties of Nasicon-type LixM2(MoO4)3 for lithium secondary batteries)

RN 278174-30-4 HCAPLUS
CN Iron lithium molybdenum oxide (Fe2Li0-6Mo3O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mo	3	7439-98-7
Li	0 - 6	7439-93-2
Fe	2	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 278174-29-1, Aluminum lithium molybdenum oxide 278174-30-4 , Iron lithium molybdenum oxide
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(cathode properties of Nasicon-type LixM2(MoO4)3 for lithium secondary batteries)
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1998:275040 HCAPLUS Full-text
DOCUMENT NUMBER: 129:6593
ORIGINAL REFERENCE NO.: 129:1473a,1476a
TITLE: Lithium secondary batteries using lithium metal nitride anodes and having high energy density
INVENTOR(S): Honbo, Hidenori; Yamagata, Takeo; Muranaka, Yasushi
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10116628	A	19980506	JP 1996-269625	19961011
			<--	
PRIORITY APPLN. INFO.:			JP 1996-269625	19961011
			<--	

AB The title batteries comprise cathodes selected from Li1+xMn2O4, Li4+xMn5O12, Li2+xMn4O9, LixV2O5, LixV6O13, Li1+ xV3O8, and LixFe2(SO4)3 (x = 0-12), and Li3-y-zMyN (M = Cu, Co, Ni; 0 < y ≤ 1.5; z = 0-1.5) as anode active mass. Thus, a Li battery using V2O5 cathode and Li2CuN anode showed 120 mWh discharge power, vs. a Li battery using LiCoO2 cathode and graphite anode showed 65 mWh.
IT 207352-70-3, Lithium manganese oxide (Li4-16Mn5O12)
207352-74-7, Iron lithium sulfate (Fe2Li0-12(SO4)3)
RL: DEV (Device component use); USES (Uses)
(cathodes; Li secondary batteries using Li metal nitride anodes)

RN 207352-70-3 HCAPLUS
CN Lithium manganese oxide (Li4-16Mn5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mn	5	7439-96-5
Li	4 - 16	7439-93-2

RN 207352-74-7 HCAPLUS
CN Iron lithium sulfate (Fe2Li0-12(SO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	3	14808-79-8
Li	0 - 12	7439-93-2
Fe	2	7439-89-6

IC ICM H01M010-40
ICS H01M010-40; H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 1314-62-1, Vanadium oxide (V2O5), uses 10028-22-5, Iron sulfate [Fe2(SO4)3] 12031-92-4, Lithium manganese oxide (Li4Mn5O12) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12423-04-0, Lithium vanadium oxide (LiV3O8) 107827-56-5, Lithium vanadium oxide (Li0-12V2O5) 127575-11-5, Lithium manganese oxide (Li2Mn4O9) 132826-48-3, Lithium vanadium oxide (LiV6O13) 207352-69-0, Lithium manganese oxide (Li1-13Mn2O4) 207352-70-3, Lithium manganese oxide (Li4-16Mn5O12) 207352-71-4, Lithium manganese oxide (Li2-14Mn4O9) 207352-72-5, Lithium vanadium oxide (Li0-12V6O13) 207352-73-6, Lithium vanadium oxide (Li1-13V3O8) 207352-74-7, Iron lithium sulfate (Fe2Li0-12(SO4)3)
RL: DEV (Device component use); USES (Uses)
(cathodes; Li secondary batteries using Li metal nitride anodes)

L40 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1997:273666 HCAPLUS Full-text
DOCUMENT NUMBER: 126:253362
ORIGINAL REFERENCE NO.: 126:48945a,48948a
TITLE: Secondary nonaqueous electrolyte batteries with lithium manganese oxide cathodes
INVENTOR(S): Nitsuta, Yoshiaki; Okamura, Kazuhiro; Nagayama, Masatoshi
PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09045326	A	19970214	JP 1995-194565	199507 31

<--

JP 3331824 B2 20021007
PRIORITY APPLN. INFO.: JP 1995-194565
199507
31

<--

AB The batteries use cathodes composed of Li Mn oxides Lix+y+1Mn5O12 (1.5 ≤(x-y) ≤4.5 and x, y >0) belonging to Fd3m (number 277) space group and having a space structure (Lix)8a(Liy)16c(LiMn5)16dO12 (x, y = mol number; 8a, 16c, 16d = site). The batteries have high capacity.
IT 188666-78-6, Lithium manganese oxide (Li7Mn5O12)
RL: DEV (Device component use); USES (Uses)
(cathodes from lithium manganese oxide with Fd3m space group structure of batteries)
RN 188666-78-6 HCAPLUS
CN Lithium manganese oxide (Li7Mn5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mn	5	7439-96-5
Li	7	7439-93-2

IC ICM H01M004-58
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 188666-78-6, Lithium manganese oxide (Li7Mn5O12)
RL: DEV (Device component use); USES (Uses)
(cathodes from lithium manganese oxide with Fd3m space group structure of batteries)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L40 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1997:226044 HCAPLUS Full-text
DOCUMENT NUMBER: 126:214484
ORIGINAL REFERENCE NO.: 126:41431a,41434a
TITLE: Anodes for secondary polymer electrolyte batteries
INVENTOR(S): Tsucha, Kenji; Mitsuishi, Iwao; Tanaka, Masashi
PATENT ASSIGNEE(S): Toshiba Battery, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09022734	A	19970121	JP 1995-171126	199507 06

<--

PRIORITY APPLN. INFO.: JP 1995-171126
199507
06

<--

AB The anodes are Li-intercalatable Li spinel oxides, e.g., Li4+zTi5O12 (z ≤3) holding nonaq. electrolytes. Batteries using these anodes have long cycle life, low self discharge, and a high capacity d.

IT 132110-16-8, Lithium titanium oxide (Li7Ti5O12)
188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(battery anodes)

RN 132110-16-8 HCAPLUS
CN Lithium titanium oxide (Li7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	7	7439-93-2

RN 188029-35-8 HCAPLUS
CN Lithium titanium oxide (Li4-7Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4 - 7	7439-93-2

IC ICM H01M010-40
ICS H01M010-40; H01M004-02; H01M004-04; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 132110-16-8, Lithium titanium oxide (Li7Ti5O12) 188029-35-8, Lithium titanium oxide (Li4-7Ti5O12)
RL: DEV (Device component use); USES (Uses)
(battery anodes)

L40 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1994:659668 HCAPLUS Full-text
DOCUMENT NUMBER: 121:259668
ORIGINAL REFERENCE NO.: 121:47323a,47326a
TITLE: Electrodes for secondary lithium batteries
INVENTOR(S): Koksbang, Rene; Shackle, Dale
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9419836	A1	19940901	WO 1994-US1489	19940214

<--

W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB,

HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL,
PT, RO, RU, SD, SE, SK, UA, US, UZ, VN
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT,
SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

US 5418090	A	19950523	US 1993-18939	199302 17 <--
AU 9462384	A	19940914	AU 1994-62384	199402 14 <--
EP 685118	A1	19951206	EP 1994-909592	199402 14 <--
EP 685118	B1	19970502		
R: DE, DK, ES, FR, GB, IE, IT				
JP 09501001	T	19970128	JP 1994-519038	199402 14 <--
ES 2105662	T3	19971016	ES 1994-909592	199402 14 <--
JP 2001313080	A	20011109	JP 2001-80391	199402 14 <--

PRIORITY APPLN. INFO.:	US 1993-18939	A	199302 17 <--
	JP 1994-519038	A3	199402 14 <--
	WO 1994-US1489	W	199402 14 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The active material of the battery anode is LixMnyOz or LipMn2O4, where x = 1-7, yr = 1-5, z = 2-12, and p = 2-4. According to 1 version of the invention, the anode and cathode are formed of LiqMn2O4, where q = 1-3.

IT 158737-80-5, Lithium manganese oxide (Li1-7Mn1-5O2-12)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(battery anodes)

RN 158737-80-5 HCAPLUS

CN Lithium manganese oxide (Li1-7Mn1-5O2-12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2 - 12	17778-80-2
Mn	1 - 5	7439-96-5
Li	1 - 7	7439-93-2

IC ICM H01M004-50
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 158737-80-5, Lithium manganese oxide (Li1-7Mn1-5O2-12)
158737-81-6, Lithium manganese oxide (Li2-4Mn2O4)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(battery anodes)
OS.CITING REF COUNT: 21 THERE ARE 21 CAPLUS RECORDS THAT CITE THIS RECORD (21 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1988:175740 HCAPLUS Full-text
DOCUMENT NUMBER: 108:175740
ORIGINAL REFERENCE NO.: 108:28739a,28742a
TITLE: Lithium insertion in several molybdenum(IV) oxide phases at room temperature
AUTHOR(S): Huang, C. K.; Crouch-Baker, S.; Huggins, R. A.
CORPORATE SOURCE: Dep. Mater. Sci. Eng., Stanford Univ., Stanford, CA, 94305, USA
SOURCE: Journal of the Electrochemical Society (1988), 135(2), 408-12
CODEN: JESOAN; ISSN: 0013-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The electrochem. insertion of Li into several Li-Mo(IV)-O ternary phases, as well as MoO2 itself, is described. The standard molar Gibbs' free energies of formation of the various insertion products were measured and are compared with those of the parent materials. Also, Li chemical diffusion coeffs. are reported for several compns.
IT 114105-21-4, Lithium molybdenum oxide (Li6Mo5O12)
RL: PRP (Properties)
(electrochem. formation and free energy of formation and lithium diffusion in)
RN 114105-21-4 HCAPLUS
CN Lithium molybdenum oxide (Li6Mo5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mo	5	7439-98-7
Li	6	7439-93-2

IT 114105-14-5, Lithium molybdenum oxide (Li7Mo5O12)
RL: PRP (Properties)
(electrochem. formation and free energy of formation of)
RN 114105-14-5 HCAPLUS
CN Lithium molybdenum oxide (Li7Mo5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mo	5	7439-98-7
Li	7	7439-93-2

```
CC   72-2 (Electrochemistry)
     Section cross-reference(s): 52, 65, 69, 78
IT   114105-21-4, Lithium molybdenum oxide (Li6Mo5O12)
     RL: PRP (Properties)
        (electrochem. formation and free energy of formation and lithium
        diffusion in)
IT   69550-44-3   113670-97-6, Lithium molybdenum oxide (Li0.67MoO2)
     113670-98-7, Lithium molybdenum oxide (Li0.33MoO2)
     114105-14-5, Lithium molybdenum oxide (Li7Mo5O12)
     RL: PRP (Properties)
        (electrochem. formation and free energy of formation of)
OS.CITING REF COUNT:     6     THERE ARE 6 CAPLUS RECORDS THAT CITE THIS
                               RECORD (6 CITINGS)


=>
```